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Agent	Hwa-Ik Lee	Hye-Jung Won	Myeong-Seop Kim
Inventor	Mi-Yeong Heo	Hyeong-Jun Kim	Jong-Jin Seong
Right Holder	JaeDanBeopInHanGukJeonJaTongSinYeonGuWon-Pull up tag.
Examiner	Je-Hyeon Park
Title of Invention	METHOD FOR TRANSMITTING MULTIMEDIA DATA

Abstract

The present invention has the effect that as the thing about the transmission method of multimedia data which is in the synchronization relation of the multimedia communications system consisting of the server system (3), and the terminal system (2), the information about all objects in which the server system receiving a lower-part, and this is demanded for a transmission the request for transmission is stored about objects belonging to the processing unit crystallization of the quality and processing unit of the quality in the terminal system in the server system in case it has the demand of a user. The point of time when the object synchronized with the point of time when the synchronized object is changed is changed and the objects which have to be synchronized between the next point of time are found and it stores. And the information about the time in which a presentation is possible is transmitted in each terminal system finding the lifetime of the stored objects and requests data transmission. It fits to the presentation time drawing data deciding the time when the size and presentation of the buffer in which the terminal system receiving this is appropriate are possible and are transmitted and the result of coming under the demand of a user is displayed. It displays to a user in partial data which can fit the relation of motive while multimedia data which is in the synchronization relation is transmitted through the communications network and the real-time presentation of the A -sensitive audio the delay time or video data is possible among multimedia data. In that way the reaction time of the information processing which a user feels can be reduced. As to the server system (3), the multimedia information which is useful to a different users is stored. The terminal system (2) is connected to the communications network (4) and which accesses the information stored in the server system (3) and displayed to the user (1).

Main Drawing(s)
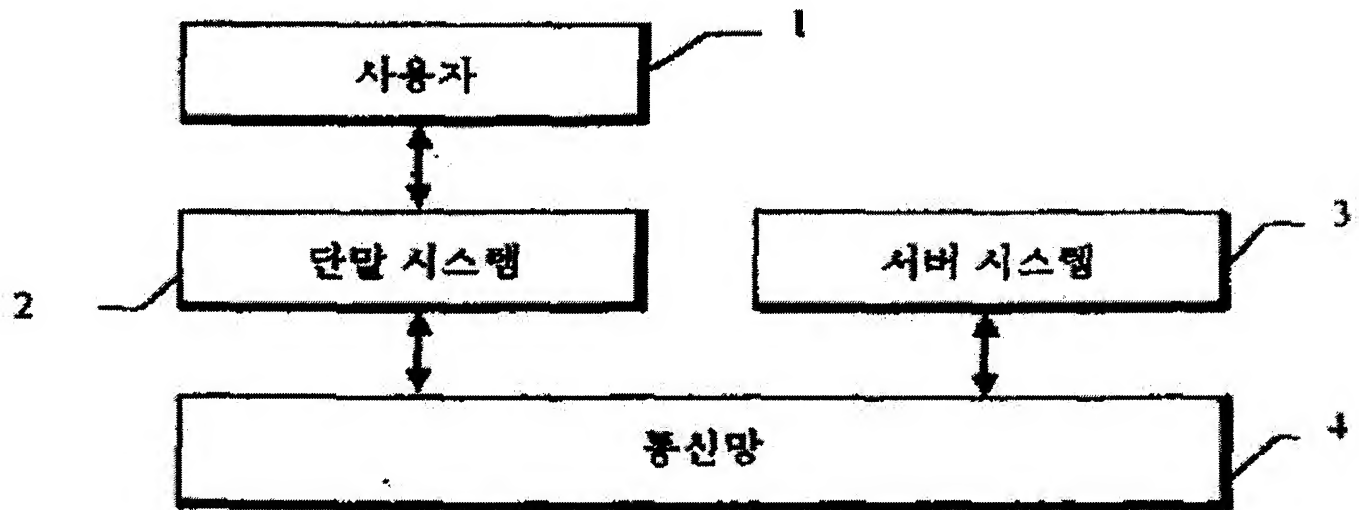
Description

[Title of invention]

The transmission method of multimedia data which is in the synchronization relation.

[The simple description of the drawing]

Figure 1 is a block diagram which schematically shows the whole configuration of the present invention.

Figure 2 is a block diagram which schematically shows the terminal system configuration being illustrated in Figure 1.

Figure 3 is a block diagram which schematically shows the server system configuration being illustrated in Figure 1.

Figure 4 is an example diagram about the arrangement at on the time axis of the object which synchronized is presented.

Figure 5 is an arrangement plan of on the time axis about the time can perform presentation of the object which is in the relation of motive transmitted through the communications network.

* The description of reference numerals of the main elements in drawings.

1: user 2: terminal system.

3: server system 4: communications network.

21: the presentation administrator 22: multimedia information administrative manager.

23: terminal communications manager 31: database.

32: data storage administrator 33: the query / transmission scheduling administrator.

34: server communications manager.

[Detailed description of an invention]

The present invention relates to the transmission method of multimedia data which is in the synchronization relation.

In the server system which the system assumed in the present invention is connected to the communications network, the multimedia information which is useful to a different users is stored. Each user accesses the information having in the server system through the terminal system.

At this time, in order to extract necessary multimedia data from the server system which the useful information is stored and display to a user, method as follows is used.

As to multimedia datas which are in the synchronization relation among data which a user demands, after it waits that they are altogether transmitted and the electrical transmission is finished, it displays the information which a user demands.

But there is a problem that this method prolongs the reaction time of the information processing which a user feels since to waiting that the multimedia data everyone having in the synchronization relation is transmitted.

In order to solve this problem, the present invention is done by a purpose that a user provides the service of the high quality to a user since the real-time presentation to the utmost cuts down the information processing reaction time about a user while maintaining the real-time presentation of the A -sensitive audio the delay time or video data among multimedia data. That is, firstly partial data which can fit the relation of motive while it does not wait that multimedia data which is in the synchronization relation is altogether transmitted through the communications network and multimedia data which is in the synchronization relation is transmitted through the communications network display to a user. At this time, a -sensitive presentation of the audio or video data the delay time has to maintain the quality among multimedia data in order not to be out favor. It is the thing about the conditional information in which it performs the role of the multimedia information administrative manager of the query / transmission scheduling administrator of the server system and terminal system and each function to suggest in the present invention in order to provide this two kinds of function.

The above-described problem is solved. And the transmission mode of multimedia data of the present invention is equipped with the multimedia information administrative manager (22): which can decide the time which it can perform presentation to a user the necessary information was transmitted through the terminal communications manager (23) from the server system it finds the presentation start time and lifetime about the demand of the user through the presentation administrator (21) with the division of the necessary information to each size, and a user in a presentation it can interpret the synchronization relation between the stored information and the information stored in the server system (3) and the query / transmission scheduling administrator (33) which can interpret this through the server communications manager (34) when being asked for the simultaneous transmission of data having in the synchronization relation from the terminal system (2), and it reflects the processing ratio of the communications network (4) and it brings about data having in the synchronization relation through data storage administrator (32) and the processing ratio extracts point of times that the motive is possible so that the real-time presentation be available in the terminal system (2) in the terminal system (2) in the electrical transmission and it thus fits and transmits the required information through the server communications manager (34).

In order that the problem of showing up in the above-described conventional method is solved, whenever the condition that is greater than the playback rate of data which uses so that the generation rate of data transmitted through the communications network display to a user is satisfied, it becomes.

In order to satisfy the condition, the point of time when the motive is required in the present invention and the point of time when the motive of datas transmitted through the communications network is possible are ***ed. The point of time when displaying data transmitted based on to a user is looked for.

Referring to the attached drawing, embodiment of the present invention is circumstantially afterward illustrated.

Figure 1 shows the summary configuration of system (it names because of being below, and the information retrieval system.) applying the transmission method of multimedia data of the present invention. The unit which is stored in the database of the information retrieval system and is searched is the MHEG object. According to the MHEG standard prescribed in ISO13522-1, the MHEG object is the state encoding the information representation recorded in the ASN 1 (Abstract Synax Notaion One) adopted in MHEG according to the BER (Basic Encoding Rule) which is the basis Inco ting regulation.

The terminal system (2) accepts the demand of a user as the part taking charge of a dialogue with the user (1) and it requests specific data based on the demand of a user in the server system (3). A user decides. Processes data transmitted from a server and notifies user of the result about a demand.

The server system (3) searches for the information stored according to the specific data demand of the terminal system (2) and it plays the role of transmitting in the terminal system (2). And it stores a relation between the information which at the same time, it has to transmit with the multimedia information which is useful in each terminal system (2) with the request of a user.

The terminal system (2) and server system (3) are connected to the communications network (4). The communications network utilized in this information retrieval system uses N-ISDN. While transmitting data through 2B channel provided from N-ISDN, because of being a packet, the unit can transmit at a time is defined. Therefore, the throughput is 128kbps. Since estimating at the transfer delay of the electronics magnetic signal at about 6ms per 1,000Km, the transfer delay does not have and it assumes. Generated in the electrical transmission.

Figure 2 shows the configuration of the terminal system (2).

The terminal system (2) accepts the demand of a user and it is comprised of the presentation administrator (21) displaying data transmitted from the server system to a user, the multimedia information administrative manager (22) serving of the etc., and the terminal communications manager (23) treating the connection about a communications with the server system and performs the electrical transmission. The multimedia information administrative manager (22) serving of the etc. determines the point of time when a presentation is possible about the multimedia information which at the same time, is transmitted it requests the simultaneous transmission about the information having in the synchronization relation to the server system it interprets the relationship information between the multimedia information having in the synchronization relation transmitted from a server.

In this terminal system, the multimedia information administrative manager (22) manages as to the role, of being most important. And it has function as follows the multimedia information administrative manager.

- It interprets about the relationship information between multimedia data and each multimedia data.

- Necessary data are grasped about the demand of a user.

- The point of time when construing datas which at the same time, are transmitted from the server system and displaying a result to a user is decided.

The information which it draws to the multimedia information administrative manager in order to perform the function and it manages can divide into the next 2 kinds.

- the information drawing necessary data in the server system with on demand: the presentation start time about the information, a lifetime, the transmission line of information toward the size of the information , and this which is in the synchronization relation are made through the interpretation about the relationship information between multimedia data stored in the server system.

- the information which it draws in order to display transmitted data to a user: the synchronized transmission line of information toward the presentation beginning time of data , and thises which is transmitted from the server system come under the time difference between the synchronization time point when being drawn in data request and the point of time when a synchronization is possible due to the limit of the communications network.

Figure 3 shows the configuration of the server system.

The server system is comprised of data storage administrator (32) controlling the database (31), the query / transmission scheduling administrator (33), and the server communications manager (34) treating a connection toward the communications of the different terminal system, and performs the electrical transmission of data. The data storage administrator (32) controlling the database (31) the information about a relation between the multimedia information and each multimedia information is stored and data stored within a database. The query / transmission scheduling administrator (33) the information having in the synchronization relation processes after translating the demand of the terminal system and searching necessary data at the same time, in order to send.

In the server system, the query / transmission scheduling administrator construing the information about the synchronization relation and takes charge of the processing about the information having in the synchronization relation draws information as follows.

- The synchronization time point is extracted through the information sent with on demand of data synchronized from the terminal system.

- Point of time to satisfy the synchronization relation due to the limit of the communications network is extracted.

- The information about datas which at the same time, it transmits is extracted from the point of time when a synchronization is possible.

The conditional information and the work flow chart for performing the role of the query / transmission scheduling administrator (33) and multimedia information administrative manager (22) are described within below, and the above-described information retrieval system.

In this information retrieval system, the unit fitting the motive in the server system for the demand of the terminal system and has to transmit data is defined at the processing unit (in other words, the screen unit) of the quality. Other rink relation is performed by the selection of the user of the terminal system in the drive of the information retrieval system. It is the combination generation of the objects which accordingly, at the same time, the processing unit of the heterogeneous has to transmit from the server system. The processing unit of the heterogeneous is classified in the multimedia information administrative manager (22) of the terminal system. And the processing unit finds among the MHEG object which the server system has been transmitting through the Behaviour part of the Composite object. Moreover, if the substantial content information (real content) which the MHEG object stored in the database of the server system includes is big, it stores to the file format and the content information holds only the file name in the MHEG object. Since the part in which the difference of the playback rate and generation rate is remarkably big is the substantial content information like a video, objects which at the same time, it sends from the processing unit of the quality substantial content information correspond to.

The presentation scenario information and presentation available information in the terminal system and server system in order to satisfy the real-time presentation requirement in the terminal system the proper presentation time is determined with the size of the

proper buffer are extracted from this information retrieval system. Thereafter, as to this information, in the terminal system through data in which a user has been being transmitted through the terminal system after a demand from the server system, the processing of the information retrieval system is performed to one recursive period till showing a result toward the demand of a user through the series of such recursive period.

The presentation scenario information as follows through the decoding of the MHEG object are extracted from the terminal system is the multimedia information administrative manager (22) for the realtime transmission of the synchronized informations.

-The presentation start time of an object(start time: GTU unit)

-The presentation duration of an object(duration: GTU unit)

-The size of an object(size: BYTE unit)

The information is the information which desires within the processing unit of the quality in on the time axis of each objects to perform presentation within the processing unit of the quality to the thing about each object. Figure 4 is an example diagram about the arrangement at on the time axis of the object which synchronized is presented. Here, used GTU is regarded as the ms (milisecond) with the Generic Time Unit, defined in MHEG.

The structure about each object of the terminal system for this defines like a next.

-Obj[n].id

Obj[n]. start time: GTU unit.

Obj[n]. end time: GTU unit.

Obj[n]. size: BYTE unit.

In the terminal system, by using send Data function as follows, the object having within the processing unit of the quality is requested to transmit to the server system.

-Send Data(parm_ent{obj_id, start_time, duration, size}+)

The presentation available information in which the query / transmission scheduling administrator (33) of the server system ***s through the presentation scenario information about each information within the processing unit of the quality in which the terminal system requires a transmission are as follows.

-The point of time when the object which at the same time, it has to send on the presentation scenario is changed and the rate of the bandwidth of each object is changed within a packet(the Sync Time:GTU unit)

-The point of time when synchronization to satisfy the synchronization relation it is transmitted through the communications network in which the synchronized object is limited is possible(the Sync Able Time:GTU unit)

-Objects which at the same time, are transmitted within a packet(Sync_Obj)

-The rate of bandwidth allocated to each object according to the change of a bandwidth(Bandwidth_Ratio)

The information in which the presentation which can be provided due to the processing ratio of the limited communications network to the terminal system is possible is extracted from the server system which the information receives the information which desires to perform presentation of the terminal system.

Figure 5 shows the arrangement plan of on the time axis about the time can perform presentation of the object which is in the relation of motive transmitted through the communications network. In the server system, this information is sent to the terminal system in advance and the time when the size and presentation of the proper buffer are possible is decided. For this, the structure about the information used in the server system is as follows.

- The Sync Time [m] :GTU unit.

- The Sync Able Time [m] :GTU unit.

-Sync_Obj[l].id

- Sync_Obj[l]. size: BYTE unit.

In the information retrieval system including the Sync Time, transmitted from the server system the Sync Able Time, the Sync Obj etc, the terminal system determines the size and the proper presentation time of the necessary buffer in a drive.

– the size of a buffer: it comes under the size of data transmitted in for hour falling under the maximum value among the absolute value of the difference of the Sync Time and Sync Able Time.

– presentation beginning time: the time when the absolute value is a maximum while the difference of the Sync Able Time and Sync Time is the negative number is most appropriate. That is, after the electrical transmission of data is requested in advance or data begin to be transmitted as the presentation beginning time defined in the point of time when desiring in order to perform presentation in the upper part at least, a presentation is later started in the upper part as the presentation beginning time extracted at least. The detail work flow chart till reaching the response showing the information fitting the information drawn in the upper part in the information retrieval system used for the demand of a user is as follows.

a) In the terminal system, the processing unit of the quality is determined according to the demand of a user. The start time with the presentation scenario information about the objects have to determine the processing unit of the quality through the decoding of the transmitted MHEG object, and to at the same time Jeon SongBat in the processing unit of the heterogeneous., the duration, and the size are extracted from the multimedia information administrative manager (22) of the terminal system is the server system.

b) It requests to transmit in the server system about objects belonging to the processing unit of the quality. The request for transmission about the objects belonging to the processing unit of the quality is done through SendDatafunction. It determines whether the object which is referred to if it has other object refers in order to perform presentation among the MHEG object transmitted from the server system belongs to the processing unit of the heterogeneous or not. If it is necessary to have the object which a if is referred to and the object does not exist in the terminal system, an again requests to transmit in the server system. Until necessary all object actual contents are included or the file name about the content information is actually found out in the processing unit of one quality, the e-process is repeated.

c) The information about all objects requesting the electrical transmission from the terminal system is stored. If the electrical transmission of the terminal system is received about all objects having the synchronization relation within the processing unit of the quality, the information (id, start time, end time, size) about each objects is stored a server in the Obj [n]. Here, the presentation end time (end time:GTU) of each object becomes the time summing the duration with the start time.

d) The point of time when the synchronized object is changed is looked for.

Every hour is among the start time and end time of each object to the ascending order the sort. If the value which is the same in a sorting is 2 the or more, one leaves and it deletes a rest. It has sorted values in the Sync Time [m] (2≤m≤2n). The point of time when the number of object which synchronized temporal values stored in the Sync Time [m] have to transmit has to change bandwidth allocated to each object it is changed is meant.

e) The point of time when the synchronized object is changed and the objects which have to be synchronized between the next point of time are found.

It is objects satisfying the object synchronized from the point of time when the synchronized object is changed to the next change point is the next condition.

(The start time≤Sync Time [i] of an object)The and (the end time≥Sync Time [i] of an object) and!(the end time of the start time= object of an object)

In the arbitrary Sync Time [i] and Sync Time [i+1], it has the synchronization relation. Therefore, at the same time, these objects have to transmit. However, the object which is the start time=end time excepts.

f) Objects synchronized between the Sync Time [i] and Sync Time [i+1] are stored in the Sync Obj [i] [1].

It is one among the object in which the arbitrary object Ojb [i] is synchronized. If it is the case, the following information is stored in the Sync Obj [k].

–Sync_Obj[k].id=Obj[j].id

–Sync__Obj[k].size=Obj[j].size*((Sync_Time[i+1]–Obj[j].start_time)/(Obj[j].end_time–Obj[j].start_time))

–Obj[j].start_time=Sync_Time[i+1]

g) The lifetime of the objects synchronized between the Sync Time [i] and Sync Time [i+1] is found. If the total size of the objects which have to have the synchronization relation for the specified period and which it has to transmit is unable to be transmitted within the determined time, the motive is actually fitted with the synchronization time point when desiring in the transfer request and the point of time when a presentation is possible is found in the terminal system and the total size stores in the Sync Able Time [k].

–Sync_Able_Time[k]=Sync_Able_Time[k-1]+(Total(Sync_Obj[k].size)/128k)

h) The Sync Time, informed each terminal system requesting the system data transmission within a west about the time when a presentation is possible the Sync Able Time, and the information about the Sync Obj are transmitted.

i) The terminal system Jeoning SongBat the information about the time in which a presentation is possible from the server system determines the time when the size of the size of the proper buffer and the buffer which the terminal system Jeoning SongBat the information about the time in which a presentation is possible is appropriate and presentation are possible.

The size of a buffer comes under the size of data transmitted in for hour falling under the maximum value among the absolute value of the difference of the Sync Time and Sync Able Time. While the difference of the Sync Able Time and Sync Time is the negative number, the difference reckons the time when the absolute value is a maximum and it requests the electrical transmission of data in the point of time when desiring in the terminal system in order to perform presentation as the presentation beginning time at least or after data begin to be transmitted, it later starts a presentation from the presentation beginning time as the presentation beginning time at least.

-The size =Max(|Sync Time [m] of a buffer- Sync_Able_Time[m]|)* 128Kbyte.

-The presentation beginning time =Max(|Sync Time [m]- Sync_Able_Time[m]0) |).

j) The terminal system fits to the presentation time drawing transmitted data and it displays the result of coming under a demand to a user.

As to process as in the above, since a response toward the demand of a user is displayed and a user again agains other demand the demand is repeated and a response is performed.

As described above, the present invention has the effect that partial data which can fit the relation of motive while multimedia data which is in the synchronization relation is transmitted through the communications network display to a user and the real-time presentation of the A -sensitive audio the delay time or video data is possible among multimedia data. In that way the reaction time of the information processing which a user feels can be reduced.
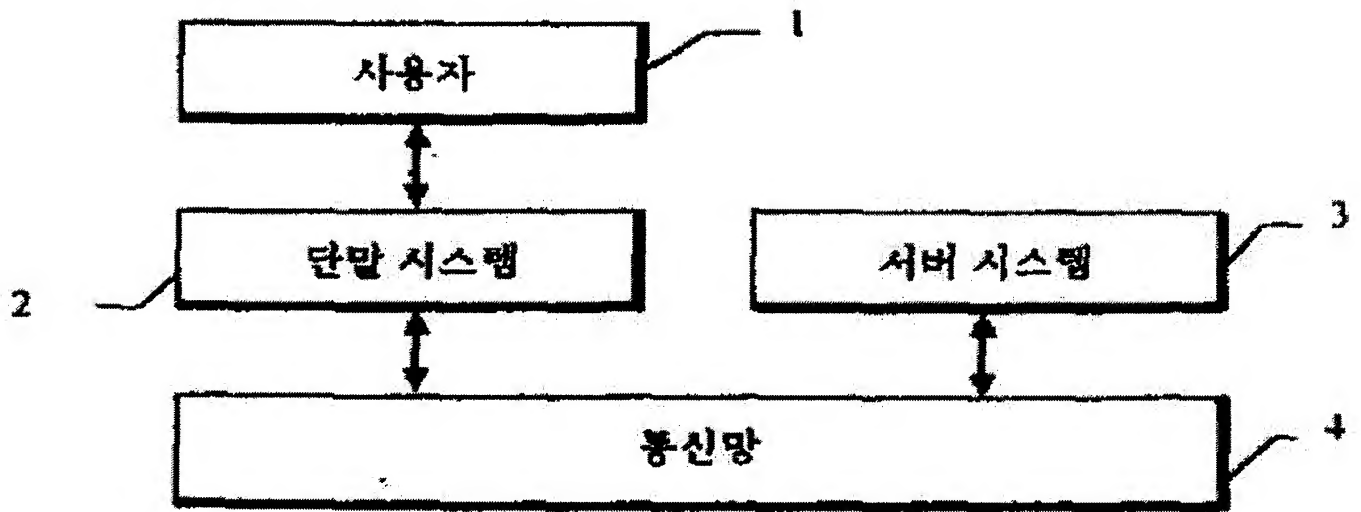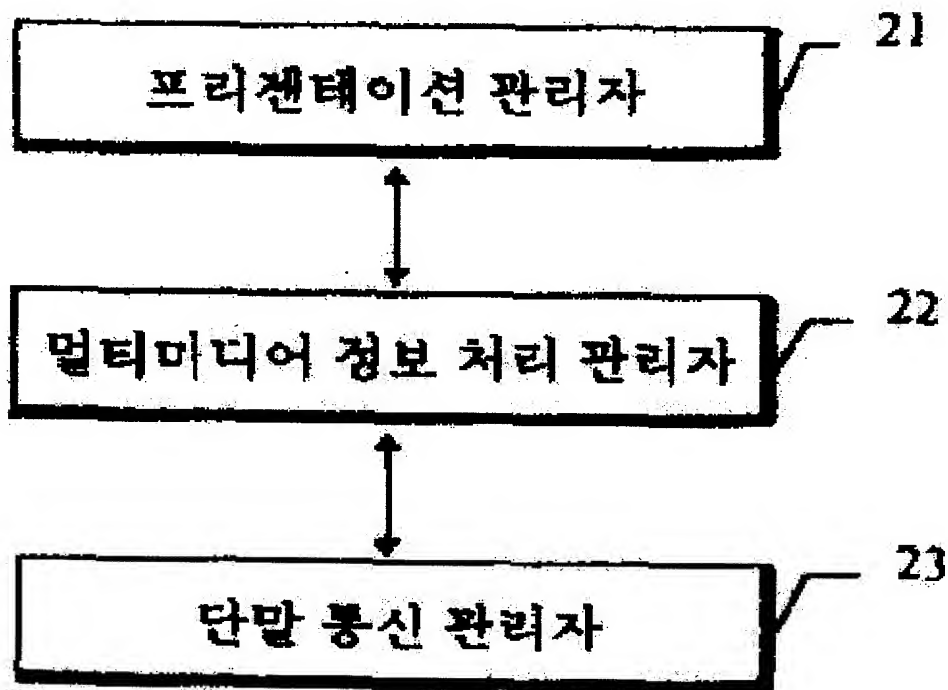
Claims

■ Claim 1:

The data communications method of the multimedia communications system consisting of the server system (3), and the terminal system (2) that is useful to a different users, said data communications method of the multimedia communications system consisting of the server system (3), and the terminal system (2) are comprised of the first process, which determines the processing unit of the quality in the terminal system it has the demand of a user and the second process, requested to transmit in the server system about objects belonging to the processing unit of the quality of the first process and the third process, which the information about all objects in which the server system receiving the request for transmission of the second process is demanded for a transmission is stored and the fourth process, finding the point of time when the object in which the server system which the information about the objects is stored is synchronized is changed in the third process and the point of time when the synchronized object is changed in the server system the fourth process is processed and the fifth process, finding objects which have to be synchronized between the next point of time and the sixth process, storing objects found in the fifth process and the seventh process, finding the lifetime of the stored objects in the sixth process and the eighth process, where the server system transmits the information about the time in which a presentation is possible in each terminal system requesting data transmission and the ninth process, deciding the time when the size and presentation of the buffer in which the terminal system Jeoning SongBat the information about the time in which a presentation is possible in the eighth process from the server system is appropriate are possible and the tenth process which after the ninth process is processed, it fits to the presentation time drawing data in which the terminal system is transmitted and displays the result of coming under the demand of a user. As to the server system (3), the multimedia information is stored. The terminal system (2) is connected to the communications network (4) and which accesses the information stored in the server system (3) and displayed to the user (1).
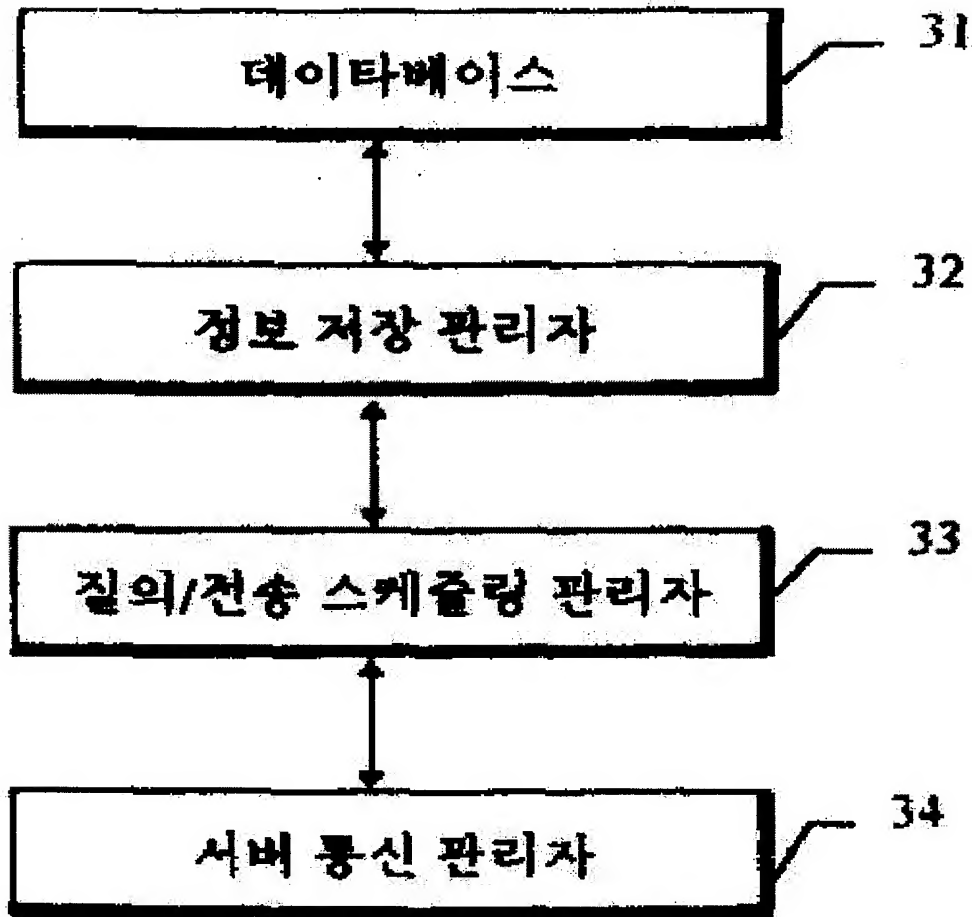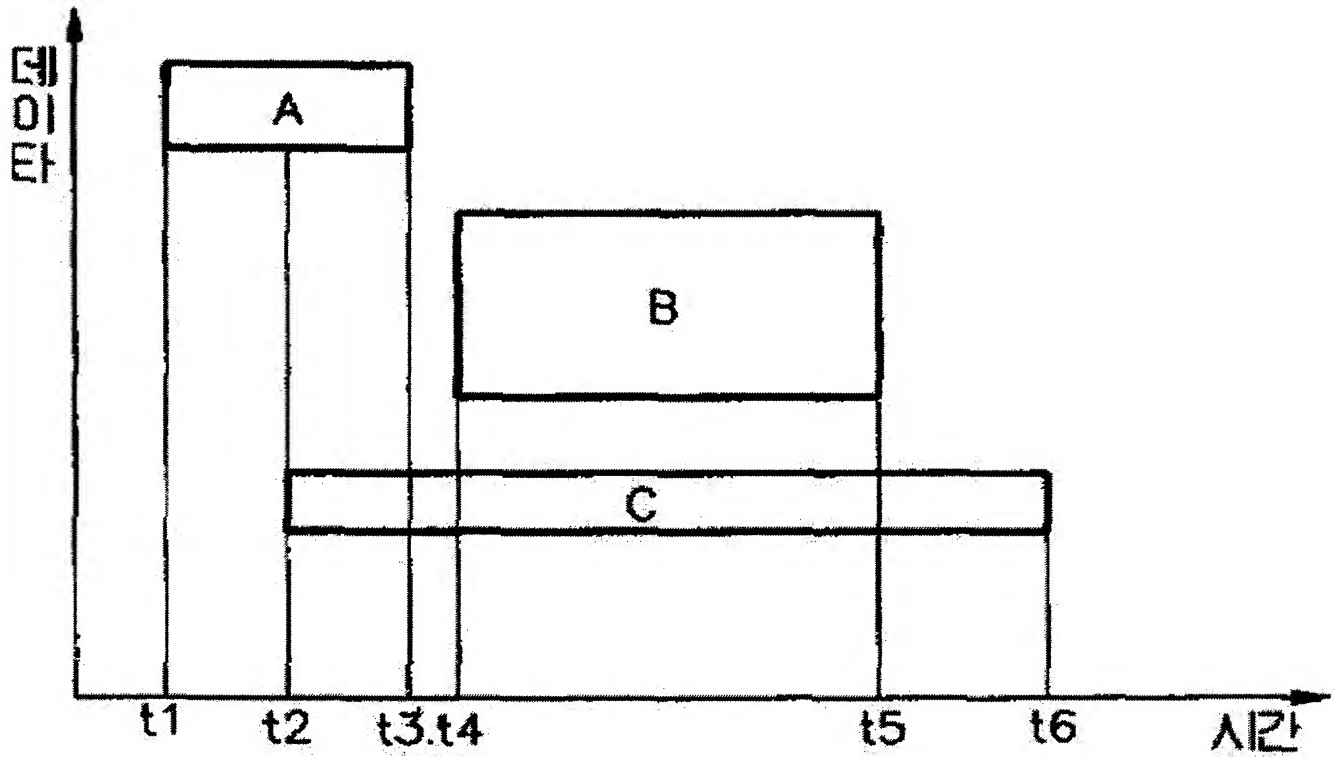
Drawing

■ Fig. 1

사용자 — 1

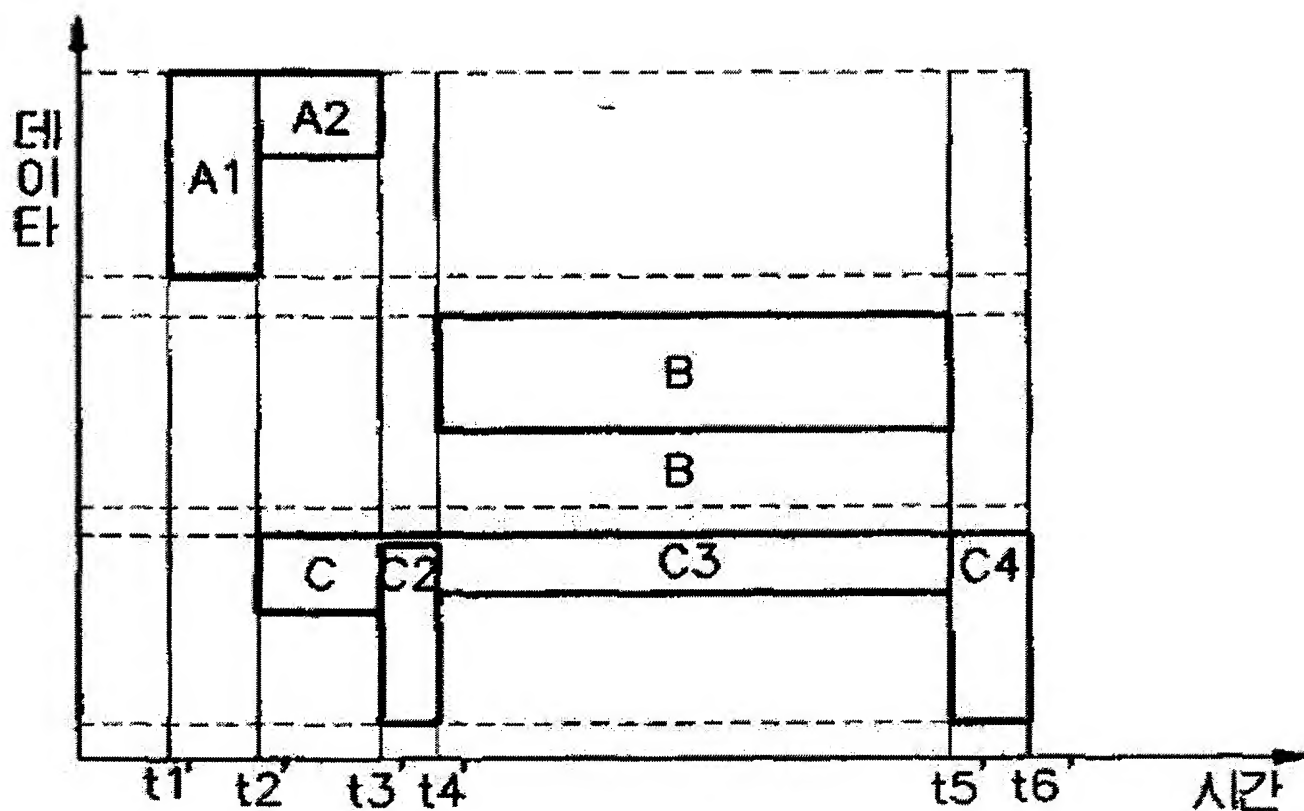단말 시스템 — 2

서버 시스템 — 3

통신망 — 4

■ Fig. 2

프리젠테이션 관리자 — 21

멀티미디어 정보 처리 관리자 — 22

단말 통신 관리자 — 23

■ Fig. 3

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┌─────────────────────────────┐
│        데이타베이스          │───── 31
└─────────────────────────────┘
              ↕
┌─────────────────────────────┐
│      정보 저장 관리자        │───── 32
└─────────────────────────────┘
              ↕
┌─────────────────────────────┐
│   질의/전송 스케줄링 관리자  │───── 33
└─────────────────────────────┘
              ↕
┌─────────────────────────────┐
│      서버 통신 관리자        │───── 34
└─────────────────────────────┘
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■ Fig. 4

■Fig. 5

Legal Status

Date	Type of Document	Status
19941213	Patent Application	Received
19941213	Request for Examination	Received
19971231	Notice of Submission of Opinion	Delivery Completed
19980228	Amendment including Specification etc.	Received
19980228	Written Opinion	Received
19980430	Written Decision on Registration	Delivery Completed

Disclaimer

related to this translation.
Not-translated word will be marked with asterisks (***).